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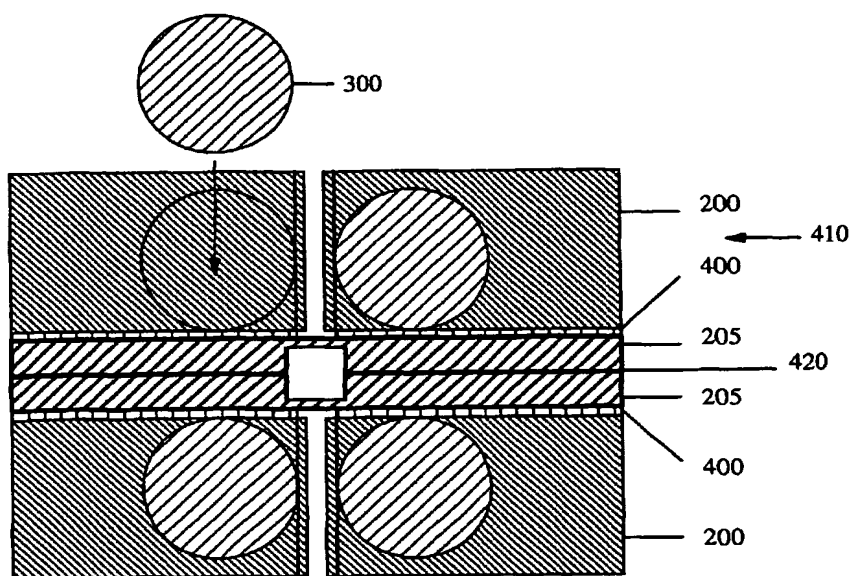
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[Continued on next page]

(54) Title: MONOLITHIC MICRO-ENGINEERED MASS SPECTROMETER



(57) Abstract: A method of constructing a micro-engineered mass spectrometer from bonded silicon-on-insulator (BSOI) wafers is described with reference to a quadrupole spectrometer. The quadrupole geometry is achieved using two BSOI wafers (200), which are bonded together to form a monolithic block (410). Deep etched features and springs formed in the outer silicon layers are used to locate cylindrical metallic electrode rods (300). The precision of the assembly is determined by a combination of lithography and deep etching, and by the mechanical definition of the bonded silicon layers. Deep etched features formed in the inner silicon layers are used to define ion entrance and ion collection optics. Other features such as fluidic channels may be incorporated.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical; search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TULLSTALL J J ET AL: "Silicon micromachined mass filter for a low power, low cost quadrupole mass spectrometer" 25 January 1998 (1998-01-25), MICRO ELECTRO MECHANICAL SYSTEMS, 1998. MEMS 98. PROCEEDINGS., THE ELEVENTH ANNUAL INTERNATIONAL WORKSHOP ON HEIDELBERG, GERMANY 25-29 JAN. 1998, NEW YORK, NY, USA, IEEE, US, PAGE(S) 438-442 , XP010270256 ISBN: 0-7803-4412-X	1,35
A		2-34, 36-39
A	US 6 025 591 A (TATE THOMAS ET AL) 15 February 2000 (2000-02-15) cited in the application column 4	1,35
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "O" document referring to an oral disclosure, use, exhibition or other means
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- "&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

CT/EP 03/08354

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

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